TEXTILE READER'S GUIDE

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Decortication of fibrous material

Anton Burkardt (to Sativa Corporation), USP 2,571, 108, October 16, 1951.

A new machine designed to decorticate fiber-bearing material includes device for receiving the material, crushing, feeding, scutching and cleaning.

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Felting of wool

H. Rath and G. From. *Melliand Textilber. 32*, 792-6 (1951) ; *in German.*

Experiments are carried out to investigate the properties of wool fiber chiefly responsible for felting or non-felting. The author discusses in this connection to what extent swelling and longitudinal-elastic properties influence is exerted by transversal-elastic properties (flexural elasticity, suppleness or stiffness) and the fiber abrasion on the tendency of the fiber to felt. A method is described for determining and expressing in figures, values for stiffness and abrasion in one single test. This value, which he calls

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the resistance to gliding, may be regarded as a criterion for the felting tendency of a wool fiber.

Fiber fineness is important factor of twist required for maximum yarn strength

Louis A. Fiori & John J. Brown. *Tex. Research J. 21,* 750-57 (Oct. 1951).

See front section.

Investigations of fibers

Anon. *Fibres 12,* 149 (May 1951).

Recent conclusions about the structure of wool fiber have been made possible by the use of the electron microscope. As reviewed from Dr. R. L. Elliott's paper before the West Riding Section of the British Society of Dyers and Colourists, these conclusions substantiate the theory that wool's cortical cells are made up of fibrils and microfibrils and less resistant matrix matter, and that the important cuticle has been found to have a heterogenous structure composed of three layers. Use of the electron microscope to study the surface of wool fiber is described, particularly the changes produced in the fiber after chemical treatments which were designed to produce non-felting wool.

Laminated wool for use in the textile industry

D. R. P. Booth. *J. Tex. Inst. 42,* P867-P872 (Sept. 1951).

Deals with the properties of a special laminated compressed wool material. Cites the advantages of laminated wool for use in the manufacture of shuttles, picking sticks, box backs and fronts (on box-type looms), swells, raceboards and sley plates. Lists the various steps in the manufacture of this item.

Mechanical properties of cellulose fibers

Anon. *Tex. Industries & Fibres 12,* 288-90 (Sept. 1951).

Those mechanical properties of fibers which were measured when spinning and weaving were carried out exclusively by traditional methods a hundred years ago were the strength and the extension of break. Even today routine testing of yarns in our big rayon factories consists mainly of measuring these two quantities.

Rayon technicians have adopted a multitude of devices to obtain the best compromise, to steal as much tenacity as possible and to give away as little extensibility as may be. The approach has had to be empirical because the factor's underlying the relation between extensibility and tenacity have been very imperfectly understood.

Within the last five years there has been a

great revival of fundamental research on fibers; this has followed from the pioneer work of such men as Sponsler, Mark, and Astbury; a few very difficult corners in fiber science were turned.

The most important of the modern developments of fiber science has been the linking up of the mechanical properties with the internal structure of fibers. Sponsler and his contemporaries were able to show, even before 1930, that the cellulose molecule was long, while quite early in the thirties Astbury, as a result of his researches on protein fibers, advanced the generalization that fibers are what they are because their molecules are long and fibrous.

From it have followed many new concepts including the relation of orientation to strength and extensibility, the existence of crystalline and amorphous regions in the fiber, the slipping of molecules over each other and the only occasional rupture of primary valences when a fiber is broken, the relation between density and orientation, and that between observed values of the strength of fibers and those calculated from a knowledge of the force necessary to rupture the bonds in the fiber structure. In effect, the main single advance has been the correlation of the internal structure of fibers with their mechanical properties.

The higher orientation and consequently closer packing of the molecules in the crystalline parts of a fiber gives to highly crystalline cellulose fibers higher densities than fibers which have a low percentage of crystalline matter, i.e. those in which a large part of the volume of the fiber is in a disorganized or amorphous condition. In fact, ramie which is the native cellulose fiber with the best orientation, i.e. the greatest crystallinity, has a density of 1.553, cotton has a value of 1.547 and viscose rayon one of 1.518—1.525. All these values are in the right direction to satisfy the theory and on the face of it they seem fairly satisfactory; in fact they are probably less satisfactory because if the density is calculated from the dimensions of the elementary cells, those of the crystalline regions are 1.59 for native and 1.58 for regenerated cellulose. The much lower "found" values are attributed to the presence of amorphous regions of lower density and these are supposed to be more widespread in regenerated than in native cellulose.

It is believed that water molecules when taken up by a cellulosic fiber are absorbed by the amorphous matter, so that the greater the amorphous portion of the fiber the greater should be its water sorption. In fact viscose rayon takes up about

twice as much water as cotton and this ratio is in agreement with the values of crystallinity calculated from density measurements. It has, for example, been calculated that the crystallinity of viscose rayon is about 25 per cent, and that of native cellulose is more than twice as much.

Furthermore, although the tenacity of a viscose rayon fiber in which the molecules are only poorly oriented is about 2 grams per denier, yet if such a fiber is stretched when it is in the plastic condition (e.g. during the spinning), the orientation of its molecules is greatly improved and its tenacity can be brought up to 5 or 6 grams per denier. In the case of Fortisan, a tenacity of 7 grams per denier is common, and by the adoption of special devices, tenacities as high as 9 grams per denier have been attained. In such a fiber the orientation is probably almost perfect and the strength corresponds nearly to that required to overcome the Van der Waals' attractive forces between molecule and molecule.

Method of producing products of animal fibers

James W. Hall, John P. Hollihan, Jr., and Frederick F. Morehead (to American Viscose Corporation), USP 2,570,443, October 9, 1951.

A method for manufacturing products comprising fibers which occur naturally in beef tendons which comprises cutting the fibers to a selectively controlled length in the range from 0.1 to 5.0 mm., suspending the cut fibers in a swelling liquid, and forming the suspension into products of a predetermined shape.

New textiles: Their impact on manufacturers and users

B. P. Ridge. *J. Text. Inst. 42*, P. 885-893 (Sept. 1951).

Discusses the three main classes of textile fibers: (1) natural fibers, (2) those made from naturally occurring polymers such as cellulose and proteins and (3) those made from synthetically produced polymers. Cites some of the general properties of the three types and mentions some of the problems encountered in their use.

Process of producing a spinnable sliver

Barend Gysbertus Hendrikus Van der Jagt. USP 2,572,783 (Oct. 23, 1951).

A process of preparing a brownish spinnable sliver from fibers contained in the stems of scrub palmetto plants (Serenoa repens), which process comprises the steps of boiling fibers obtained by a mechanical defibration of scrub palmetto plant stems for a period ranging from about 10 minutes to about 2 hours in an aqueous caustic soda

solution of between about 4° and about 55° Be. strength, the strength of the solution being related to the boiling time according to the formula:

$$a \times b = 5 \text{ to } 12$$

where a is the boiling time in hours and b is the strength of the solution in degrees Be., washing the fibers with an aqueous medium having a pH value between about 5.5 and 7, drying them, the fibers developing during the drying, hook-shaped kinks causing adjacent fibers to cohere together while being slidably displaceable lengthwise of one another, and forming the kinky fibers on a sliver-forming machine into a brownish spinnable-sliver.

Progressive delignification of jute fiber with chlorine dioxide

A. B. Sen Gupta & H. J. Callow. *J. Tex. Inst. 42*, T375-T383 (Sept. 1951).

Presents a method for removing lignin progressively from jute fiber with chlorine dioxide solution, without disturbing as far as possible, the carbo-hydrate portion and without destroying the fiber structure. Cites the influence of pH, temperature and drying on the extent of lignin removal.

Artificial fibers A 2

Animal-protein synthetic has wool-like composition

Anon. *Textile World 101*, 115 (Nov. 1951).

See front section.

"Dacron" from fiber to fabric

Staff. *Textile Industries 115*, 111-13, 183 (Oct. 1951).

Dacron staple fibers are reported to run well throughout the manufacturing process at Newnan Cotton Mills where finished fabrics of Dacron are manufactured on the American worsted system. A worsted type picker is used in preopening the stock and a cotton type picker equipped with a porcupine Buckley beater gives satisfactory results in picking. Rayon type, or synthetic, roller top cards equipped with cotton type lickers-in, a fringe roll instead of a fluted feed roll, and a fancy roll are employed for carding. In spinning, Whitin F-2 Spinning frames with conical oil-type spinning rings are utilized. Both cotton and rayon type slashers are now used at Newnan for slashing Dacron, but a specially designed worsted type air dryer slasher will be used in the future to give more satisfactory results. Crompton & Knowles C-4 looms are used in weaving. The dyeing of Dacron is done in stain-

less steel kettles with acetate dyes used for best results in both piece goods and package yarn dyeing, and the finishing of Dacron fabrics is done on worsted type equipment. Some details of the processing of Dacron fibers are discussed with facts on abrasion resistance, wrinkle resistance and flexing, moisture regain, weight, and melting point given.

New fiber-staining techniques to determine fiber structure—II

A. J. Hall. *Fibres 12,* 124-125 (Apr. 1951).

A useful tool to aid fiber research is made possible by a new staining technique to determine fine fiber structure. The technique may replace the earlier Congo Red staining method of J. M. Preston which has been used to discover many features of viscose rayon fibers. Such research evaluates the rayon produced from different spinning methods and makes possible the production of fibers having special strength and dyeing properties.

The new industrial fabrics

A. Wyn Williams. *Rayon & Synthetic Tex. 32,* 36, 119-20 (Sept. 1951).

Since synthetic fibers can be scientifically engineered to do a specific job and are capable of being custom-produced with a pre-determined end-use, they are considered superior to natural fibers for making industrial fabrics. In addition, synthetic fibers can be endowed with special properties of toughness, tensile strength, lightness, resistance to chemicals, water, fire and microorganisms, etc. Examples of the superiority of particular synthetics in certain industrial fields are cited in this brief survey of the industrial applications of synthetic fibers.

Production of colored filaments and fibers

Edmund Waters and Leonard Wood (to Imperial Chemical Industries Limited), USP 2,571,319, October 16, 1951.

A process for the production of colored filaments and fibers from polyethylene terephthalate which comprises dissolving organic coloring matter in polyethylene terephthalate and thereafter spinning the polyethylene terephthalate, the organic coloring matter being stable at the spinning temperature.

Properties and possibilities of present synthetic fibers

J. A. Davis, *Canadian Textile Journal 68,* 60-62 (Nov. 1951).

To outline the techniques used in the production of fibers, three major variables have been exploited to date, these are: chemical constitution, spinning method, and size or form of the material.

Characteristics of newest synthetics:

High strength,
Ability to be heat stabilized,
Excellent durability,
Essentially equivalent wet and dry properties.

Rayon fiber breakage

Dr. Shozo Tachikawa. *Rayon and Synthetic Textiles 32,* 34-5, 62, 68 (Nov. 1951).

The breaking phenomena of single fibers, thread bundles and fabrics of various types of rayon staple, such as ordinary rayon staple, Toramomen, and cotton were examined. Special curves which indicate the breaking velocity were obtained by measuring the breaking effect according to time. A nearly proportional relation between the ratio of wet/dry strength and the results of strength in 6% NaOH, and the degree of breakage was shown as a result of tests. Broken parts of the samples were observed by microscope and breaking mechanisms examined. Three tyes of ball mill tests are explained and results given.

Uses of artificial fibers in woolens

R. R. Franck. *J. Tex. Inst. 42,* p 873-876 (Sept. 1951).

Discusses briefly some of the material produced by mixing wool with synthetic fibers in particular viscose, nylon and ardil, on the woolen system. Gives four possible methods of obtaining the synthetic fiber-wool mixtures:

(1) fiber/fiber mixtures in yarns
(2) continuous filament core yarns buried in the wool
(3) use of separate ends and picks in in the cloth
(4) use of supporting threads

Use of nylon in woolens and worsteds

Harold Garner, *Canadian Textile Journal 68,* 67-69 (Nov. 1951).

In fabric design there is a major consideration of strength and a secondary consideration of ornamentation. Nylon filament yarns can contribute strength and ornamentation to fabrics and even where used as ornamentation they do not detract but add to the major requisite of strength.

Nylon yarn is used as striping yarns, core thread and binding yarns. As staple in wool,

casein or angora blends, it adds strength and improves processing efficiency. The effect of nylon bleaching on abrasion and other factors are encouraging to the fabric designer.

Why five fibers?

J. B. Quig. *Rayon & Synthetic Textiles 32,* 34-5, 69, 71 (Sept. 1951).

The characteristics of the five fibers made by E. I. du Pont de Nemours & Co.: viscose, cellulose acetate, nylon, Orlon, and Dacron are reviewed; and the similarities and differences of these fibers are pointed out. Each of these fibers possesses unique functional properties, and no one of them possesses all of the properties needed for certain uses. Thus, it is felt that they serve to complement each other with the use of synthetic fibers definitely broadened by the proper application of each fiber either alone or in blends.

YARN PRODUCTION B

Fiber preparation B 1

The constant challenge

Jim McComb. *Rayon & Synthetic Textiles 32,* 31, 51, 53-4 (Sept. 1951).

In processing synthetic fibers, every lot must be carefully examined for variations in the stock that may require different treatment from the ordinary. Success of the manufacturing process depends on the way the stock is started through the mill. For blended yarns, correct proportions of stock and clean equipment are essential. When stock is received in baled form, it must be first opened, using a rayon opener, aerated and conditioned, and then blended either by hand or by mechanical blending units. With stock in tow form, a conventional staple cutter may be used to reduce the continuous filament to staple, or the Pacific Converter may be used to form a sliver. The Pacific Converter has been proven most satisfactory in blending tow or tow with top. Points of major importance in processing blended synthetic yarns are discussed.

Cotton opener developed for air-free cleaning

Anon. *Textile World 101,* 114 (Nov. 1951).

See front section.

Rag picking vs. picking and shredding

J. H. Senior. *Rayon & Synthetic Tex. 32,* 39, 41, 43 (Sept. 1951).

The rag picker is a fine machine for opening many kinds of waste materials, and its various adjustments make it very versatile. However,

the high cost of labor and maintenance in operating the rag picker, and, particularly, the fiber breakdown in waste caused by the grinding action of the machine are serious draw-backs. Research by Proctor & Schwartz has produced the newer type of picking machine, which softens up the stock, followed by a secondary operation of shredding in a machine which does the final opening. By eliminating the grinding action, longer fibers are obtained from the waste material. Other advantages include increased production, lower labor costs per pound, and lower cost per pound of output. Some details of the rag picker, the new type picking machine, and the shredding machine are described.

Rectilinear worsted comb

Anon. *Textile Industries 115,* 141 (Nov. 1951).

See front section.

Saco-Lowell developing new-type cotton cleaner

Anon. *Textile World 101,* 112 (Nov. 1951).

See front section.

Some aspects of the emulsion process of wool scouring

G. N. Bhat. *Indian Tex. J.* 733-736; 740 (Aug. 1951).

In this, the second part (Part I — Indian Tex. J. October 1951) of two papers, the exact operating conditions for industrial scouring are provided. The effect of pH temperature, time, detergent concentration and salt concentration on grease removal are cited.

Universal adjustable grid bar assembly for waste control on pickers

Staff. *Textile Industries 115,* 105 (Oct. 1951).

Better control of air currents under the beaters of pickers means a better control of the droppings; and control of the air currents can be obtained by more accurate setting of the grid bars. The Universal Adjustable Grid Bar Assembly, designed to give closer and more accurate settings for controlling the amount and quality of the droppings, consists of cheeks for bolting to the picker sides, 4 grid bars with adjusting brackets, and an adjustable steel bottom for controlling the air currents. The grid bars are cold drawn steel of triangular cross section of a sufficient size to prevent deflection. Individual adjustments of each grid bar can be made as well as adjustment of the whole grid bar assembly as a unit. The assembly may be applied to most models of old pickers, as well as to new

machines. Picker droppings are said to be increased as much as 100% without wasting an appreciable amount of good cotton. Mfr: Saco-Lowell Shops.

Carding and combing B 2

Assessment of a carded web

P. P. Townend. *Wool Review 23*, 37 (Oct. 1951).

See front section.

Can changing mechanism for textile machines

Odus C. Hinson (to The Terrell Machine Company), USP 2,571,880, October 16, 1951.

Apparatus for delivering sliver into cans, comprising in combination a machine producing sliver, means coiling the sliver into a can, means stopping the driving of such machine upon delivery of a predetermined amount of sliver, means transferring the delivery of sliver from such can to an adjacent can, and means restarting the machine to produce more sliver after the transfer has been effected.

Comber improvement

John S. Dudley and Carl D. Brandt (to Whitin Machine Works), USP 2,572,122 (Oct. 23, 1951).

The improvement comprises a top comb freely suspended from the nipper frame, together with means for restraining the top comb against movement relatively to the nipper frame in the direction of its traverse path.

Fiber breakage in worsted yarn manufacture

Anon. *Tex. Industries & Fibres 12*, 291-2 (Sept. 1951).

The problem of fiber breakage in carding was investigated by Townend and Spiegel (*Journal of Textile Institute*, 1946 *36*, T58) and they considered that the state of the wool fed to the card was the main cause of fiber breakage in carding. The advocates of wool cleaning by organic solvents such as trichlorethylene, claim that far less entanglement of the fibers takes place; but, apart from a large plant in the U.S.A. and one in Belgium, solvent cleaning makes no headway elsewhere. The disadvantages are obvious. The inflammable nature of most of the solvents, and toxic properties of some, have been largely responsible for the non-adoption of solvent scouring in this country.

In all considerations of fiber breakage, crimp and moisture content of the wool influence breakage. High moisture content increases the elasticity of wool. This is the reason why wool is carded in a damp condition in worsted carding, to avoid fiber breakage. It has been shown that at regains above 20 per cent, the fiber breakage in carding is reduced. To a lesser extent, variations in card setting may influence fiber breakage. In the paper by Townend and Spiegel mentioned above, the main conclusions drawn, in so far as mechanical alterations to the card are concerned, were that more wool that is put through in a given time the greater the fiber breakage; higher swift speeds give less fiber breakage; after grinding there is less fiber breakage; the reversal of fiber direction at the licker-in and divider carding points is considered to be responsible for much of the reduction in fiber length.

The Noble comb can break from 30 to 50 per cent of the fibers. Most of this fiber breakage occurs in drawing off, where the fibers are subjected to constant strain. The fibers are not drawn through the circle pins in a straight line and most of the fiber breakage takes place on account of this. Correct settings and speed of the drawing off rollers according to quality being combed can help to reduce fiber breakage to some extent.

Gill box fallers must also be suited to the quality. Too fine pinning is sometimes resorted to, in the belief that it will give better opening. But too fine pinning of fallers is a source of fiber breakage not always recognized.

The nature of worsted open drawing where draft against twist is used, inevitably causes some fiber breakage and to gauge to a nicety the twist to be used, so that smooth and even drafting results, is a big point in reducing fiber breakage in drawing. The chief settings likely to influence breakage are draft, twist and ratch. In normal methods of drawing and spinning, an increase in the draft increases fiber breakage. Adequate ratching is necessary if fiber breakage is to be kept to a minimum. The question of ratching raises problems at times, when widely differing fiber lengths are blended together. If the ratch is set to accommodate the longest fibers, the short fibers may not be adequately controlled. Some fiber breakage is impossible to avoid in such cases and the drawing overlooker has to decide how to arrange the ratching to the best advantage. Generally it is considered better to break excessively lengthy fibers in the first heavy drawing rather than gradually as the latter method makes a number of very short fiber lengths, plainly unwanted.

The worst offender in fiber breakage can be twist in the hands of the inexperienced and twist should be kept to a minimum consistent with the end having sufficient coherence to draw off at subsequent operations, without drawing out. A paper by Williamson (*Journal Textile Institute 31*, 1940 T235) deals with this subject and evidence is produced to show that twist rather higher than normal prevents proper drafting and results in fiber breakage.

Fiber motion in roller drafting

G. A. R. Foster. *J. Tex. Inst. 42*, T335-T374 (Sept. 1951).

Part I of this article discusses the theory of motion of "floating" fibers. Floating fibers are defined as those fibers which for a time are out of control of the drafting rollers since the rollers cannot be set much closer than the length of the longest fibers. Presents the present state of the mathematical theory of drafting and compares it with actual wavelength and amplitude measurements.

In Part II the theory is extended to calculation of the wavelengths and it is shown that these agree reasonably well with those observed in cotton.

Part III discusses the light this special theory throws on the laws of motion of the fibers.

In Part IV some further properties of the fiber system, as yet unconfirmed by experimental evidence, are deduced.

Static-electricity neutralizer prevents shocks to operators

Anon. *Textile World 101*, 135 (Nov. 1951).

A new static-electricity neutralizer, said to be effective and safe, has been developed by Herbert Products, Inc., represented in the U. S. and Canada by American Textile Engineering, Inc., Arlington, N. J. The new redesigned device is called the Oxy Neutralizer Cold Bar. The Cold Bar features intense ionization from its emitter points, but is said to be free from shock, stings, and sparks from the points.

Wool combing machine

William E. Christensen, William B. Smith and James J. Sandy (to James Smith and Son, Inc.), USP 2,570,767 (Oct. 9, 1951).

A machine of the class described comprising a base, a pair of upright pillars on the base, driving means within the pillars extending into the base, a bridge connecting the pillars and supported thereon, a motor on the bridge, driving means from the motor to both pillars separately, a detachable bracket on each pillar, a reciprocating brush on each bracket, a shaft in each bracket for driving the brush, a clutch member on the shaft, and a cooperating clutch member operatively arranged on each pillar for engagement therewith.

Drafting and roving B 3

Decrease variation at drawing

R. H. Pharr. *Textile Industries 115*, 145, 147, 149 (Oct. 1951).

Functions of the drawing process include decreasing variation in the sliver by doubling a number of ends and drafting them into one sliver and parallelizing the fibers for future drafting on fly frames. However, an excessive amount of variation can be imparted to the sliver at this point if drawing frames are not kept in good condition. Any action or condition that exerts an excessive amount of tension or drag on the sliver in drawing will stretch the stock and increase variation, and so all surfaces that come in contact with the drawing should be smooth and free from rust, oil, or any foreign matter. Attention should be paid to knock-off spoons, sliver cans, trumpets, tube or coiler gears, etc. Humidity and temperature should be controlled as closely as possible. Tension between the calender rolls and drafting rolls must be maintained; clearers must be picked often enough to avoid waste accumulation; top rollers, flutes, and collars must be kept in good condition with correct weights placed on the top rollers. Also, all gearing must be checked periodically for wear or slippage.

Differential drawing of slivers

Anon. *Tex. Industries & Fibres 12*, 189 (June 1951).

See front section.

Spinning B 4

Apparatus for twisting threads

Conrad Joseph Gonsalves (to American Enka Corporation), USP 2,572,135 (Oct. 23, 1951).

In apparatus for twisting thread involving the use of a collecting bobbin and a twister cap together with means for causing relative reciprocation therebetween, and a thread guide positioned above the cap, the improvement which comprises means interposed between the lower edge of the twister cap and the thread guide positioned above the cap for tensioning thread and means for moving the tensioning means to progressively increase this tension during the twisting operation.

Developments in ring spinning

Anon. *Textile Recorder 69,* 83-87 (Sept. 1951).

This survey of modern trends in cotton spinning technique and ring frame design deals specifically with high drafting systems and new methods of roller weighting. The contributions from several different ring-spinning systems are evaluated: the Casablancas long-draft, the Dodd-Whitin two-zone system, the Saco-Lowell single-apron system, the Ambler "Superdraft", the Balmes system, the use of porcupine rollers such as those in Fraschini worsted frame and in the Bird long-draft system, and the Nastrofie machine.

How to stop a mule safely

Staff. *Textile Industries 115,* 171, 173 (Oct. 1951).

It is sometimes convenient from an operating point of view to stop the carriage of a spinning mule during its outward run and perform work between the fixed and moving parts. Accidents, however, may occur because the operator gets between the fixed and traversing parts before the machine stops or because the machine is started before the work is completed. The necessary precautions that should be taken in stopping the mule safely are discussed, and the method used in one mill is described.

A new continental worsted ring spinning frame

Anon. *Tex. Industries & Fibres 12,* 294-5 (Sept. 1951).

See front section.

"One-man-band"

Staff. *Textile Industries 115,* 119, (Oct. 1951).

A machine, built in the machine shop of Textile Incorporated's Victory Mill, is used for cleaning bobbins, roller brushes, and comber dusters and for painting bands on bobbins to aid in identifying stock in process. It is located at the end of the spinning room where it is quickly accessible to carding and spinning maintenance employees. A description of the device is given.

Slubs, gouts and other yarn imperfections

James Osborne. *Textile Age,* 10-14 (Nov. 1951).

See front section.

Spinning cot

Abraham L. Freedlander (to The Dayton Rubber Company), USP 2,570,935 (Oct. 9, 1951).

As a new article of manufacture, a fiber drafting roll comprising a mandrel, a vulcanized rubber-like fiber-contacting cover layer mounted upon the mandrel, particles of finely divided material homogeneously dispersed in the cover layer and distributed in a spaced manner between the mandrel and the surface of the cover, the material having a dielectric constant different from that of the rubber-like material, and a plurality of minute pores distributed over the surface of the layer the pores being formed by irregular fissures extending through the cover layer along a path created by particles of the finely divided material.

Synthetic traveler and ring

Hugh D. Haley (to American Viscose Corporation), USP 2,572, 140, October 23, 1951.

In a device for spinning and twisting yarns and threads, the combination of a ring composed of synthetic sapphire and a traveler composed of synthetic sapphire, traveler being movably mounted on the rings.

Twisting of yarns, threads and filaments

John Raymond Foster (to T. M. M. (Research) Limited, USP 2,571, 854, October 16, 1951.

The patented twister device utilizes a hollow spindle through which the yarn is threaded and a flyer with a special driving reduction train with which to control the rotary motion and speed of the yarn package support.

Winding and spooling B 5

Altered stop motion on lap winder improves quality

Staff. *Textile Industries 115,* 169, 171 (Oct. 1951).

Single roving, caused by the stop motion failing to operate on the lap winder when a can became empty or an end broke down, has been eliminated in one mill by altering the stop motion. The electric current is jumped directly across the sliver guide and swing arm. Two holes are drilled and tapped in the tops of the swing arms, one hole on each, and guide plates; and to these are connected a short flexible single lead wire with terminals attached. Two round head bolts secure the parts.

Apron stops bobbin nicks at spooling operation

Staff. *Textile Industries 115,* 177 (Oct. 1951).

A leather apron about 16 inches square placed at the point where the bobbins hit the wood box after leaving the spooler conveyor belt is sug-

gested for preventing nicks in warp bobbins at the spooler. With the apron located about 2 inches above the bottom of the box, the fall of the bobbin on the hard surface is broken, thus preventing most of the nicks. After hitting the leather apron, the bobbins roll off into the box.

New German fully automatic pirn winder

Anon. *Rayon & Syn. Tex. 32,* 131 (Sept. 1951).

The new Schlofhorst fully automatic pirn winder is said to have winding speeds of 10,000 rpm and over. It is fitted with a magazine type of creel with the yarn passing from the cone through a double tension device and then through a special guide connected to a rotary traverse. The traverse works on the grooved drum principle. The machine is built on the single spindle principle with a change mechanism operated by a set of independent cams.

Yarn tensioning device

Paul J. Burns (to Eastman Kodah Company), USP 2,571,678, October 16, 1951.

A tensioning device for use in a yarn machine comprising a pair of pivotally connected members adapted to move relatively in parallel relation, a group of upstanding aligned parallel fingers carried by each of the members and extending toward the other member, means for moving the members relatively to position the groups of fingers in parallel intermeshing relation and in engagement with the yarn to apply tension thereto as the yarn moves over the intermeshing fingers, and means for guiding the yarn to the fingers to permit the yarn to oscillate freely over the full length of the fingers to prevent excessive wear thereof.

Yarn testing and numbering B 10

Checking twist in roving

Staff. *Textile Industries 115,* 173 (Oct. 1951).

A simple and safe method to determine turns-per-inch in checking twist in roving consists in checking the rpm of any spindle; stopping the machine and putting a colored mark on the roving on the front roller; starting the machine and running it for a specific number of seconds; stopping the machine and marking the roving on the front roller; and measuring the length of roving between the marks. The turns per inch is easily calculated by dividing the rpm by the inches per minute.

FABRIC PRODUCTION C

Yarn preparation C 1

Apparatus for sizing and drying warp yarn

Robert J. Taylor and John F. Davenport (to McConnell Sales and Engineering Corporation), USP 2,572,288, October 23, 1951.

In apparatus for treating a moving sheet of warp yarn embodying a size box and means to dry the yarn after it passes through the size box, a plurality of spaced apart rods individually connected to the driving means through a separable coupling with their longitudinal axes lying in a common plane and disposed between the size box and drying means, the sheet being divided by the rods into a plurality of sheds, adjacent ones of the rods being arranged to contact opposite surfaces of adjacent sheds, and positive drive means to rotate the rods as a peripheral speed different from the lineal speed of the sheds.

Continuous flow of uniform size to slasher available with hydropulse unit

Anon. *Textile Industries 115,* 151 (Nov. 1951).

See front section.

Deflection tensiometer

Ingham S. Roberts (to American Viscose Corporation), USP 2,570,486, October 9, 1951.

A tensiometer for measuring the tension in a strand comprising supporting means, two thread guiding means supported rotatably thereon about spaced parallel axes, a shaft parallel to the axes and rotatably mounted in the supporting means, an arm fixed on the shaft and having thread guiding means on its outer end, means carried by the supporting means for indicating at least one determined position of the latter thread guiding means relative to the two former thread guiding means, a second shaft carried by the supporting means coaxially related to the first shaft, means for rotating the second shaft, spring means connecting the second shaft to the first shaft, and means for indicating the deflection of the spring resulting from a relative rotation of the shafts from a normal position of rest.

Method of sizing textile warp yarns

Justin J. McCarthy and William J. Harrison (to Monsanto Chemical Co.), USP 2,570,830, October 9, 1951.

The method of sizing textile warp yarns which comprises treating the yarns with an aqueous starch size solution to which there has been added

a stable colloidal solution of silica consisting of silica and water, the silica solution being added to the starch solution in an amount sufficient to provide a silica content varying from 0.1 to 1% of the total sizing solution, and then drying the treated yarn.

Rayon warp preparation

S. R. Roy. *Indian Tex. J.* 745-746 (Aug. 1951).

Discusses preparation of rayon warps starting with cakes, cones, hanks and cheeses, respectively.

Tricot beam warping

Staff. *Textile Industries 115,* 114-15 (Oct. 1951).

Photographs of the steps that have been taken to improve the creeling and beaming operations at the Blue Ridge Textile Co. are presented. Included are: adequate lighting by white fluorescent lamps, movement of the ends-down annunciator panel from center of creel to front side, installation of a second convergence board between creel and convergence board, dismantled top tension rollers, an electrically operated chain hoist mounted on an overhead track to handle beams, and installation of 3 electrical static eliminators at each warper.

Yarn tensioning device

Edward A. Wentz (to Specialties Development Corporation), USP 2,570,617, October 9, 1951.

In a yarn tensioning device, a roll having a peripheral yarn receiving groove, an arm having a yarn guide at one end, means for pivotally mounting the arm, a roller mounted on the arm positioned to extend into the groove with the yarn between the roller and the bottom of the groove, and resilient means for urging the arm in a direction to cause the roller to extend into the groove and applying pressure on yarn in the groove.

Weaving C 2

Apparatus for controlling tension in warp yarns

Thomas J. Willis and William A. Smith, USP 2,571,509, October 16, 1951.

A new patent features a method of controlling the tension on warp yarns by synchronizing the use of the device with the operation of the shipper handle.

Comprised of two bars over which the warp ends travel, the device relaxes the tension in the yarn automatically when the shipper handle is moved to the inoperative position. The device

also automatically restores the normal tension in the yarn when the shipper handle is moved to the operative position. Its use is said to eliminate the occurrence of set marks in the cloth.

Attachment for multiple shuttle looms for preventing fouling of the filling threads

Clarence A. Cannon, USP 2,570,764, October 9, 1951.

An attachment for a multiple shuttle loom having the usual lay and a shuttle box structure provided with a plurality of shuttle boxes adapted to be shifted to bring the shuttles selectively into action, a plurality of finger supporting members slidably mounted with respect to the shuttle box structure, a filling thread engaging finger carried by each of the finger supporting members, a pair of springs for each of the finger supporting members oppositely disposed toward the finger supporting members and adapted to impel the same to their respective operative positions, and means adapted to locate the finger supporting members in their limit positions against the tension of the springs.

Determining size of shed opening.—II

J. M. Thomas, *Fibres 12,* 154-156 (May 1951).

After stating in a previous article that more space was available for increasing the size of the shuttle when the shuttle was entering the shed than when it was emerging from the shed, the author considers several methods of taking advantage of the conclusion. Two methods are discarded because, for most cotton cloths, it is not feasible to arrange a closed shed to occur at the beatup, though this difficulty is not so great with plain-woven rayons and some fancy cottons. It is possible, however, to increase the space available for the shuttle by increasing the dwell given to the heddle frames. This is possible by increasing the dwell so that it extends over 180 degrees of rotation of the crankshaft. Two other methods are said to be possible: (1) increasing the radius of the crank circle from the usual 2½ inches to 3 inches; (2) varying the relation between the rotation of the crankshaft and the displacement of the reed from the fell of the cloth by varying the radius of the crank circle to the length of the crank arm.

Determining size of shed opening relation of shuttle size

J. M. Thomas. *Fibres 12,* 126-129 (Apr. 1951).

The size of the shed formed by the warp yarns

and the reed depends on several factors. The article considers the factors which affect the size of the largest shuttle which can be projected through a warp shed of a fixed size.

The relation between the rotation of the crankshaft and the distance between the warp sheets at the front of the shuttle can be determined on the loom itself, or by graphical or mathematical methods. The last two methods are demonstrated in the article. Other topics considered are the calculation of the amount of bending of the warp yarns round the front of the shuttle, and factors involved in increasing the depth and length of the shuttle. The shed was shown to be much greater when the shuttle was entering than when the shuttle was leaving the shed.

Knot crusher compresses weavers' knots

Anon. *Textile World 101,* 132 (Nov. 1951).

A plier-like device for compressing weavers' knots to nearly the diameter of the strand has been developed by E. W. Twitchell, Inc., Philadelphia, Pa. It allows knotted yarns to pass through without snapping.

Let-off motion eliminates weights behind loom

Anon. *Textile World 101,* 121 (Nov. 1951).

See front section.

Long dobby chains eliminated with new attachment

Anon. *Textile World 101,* 120 (Nov. 1951).

See front section.

Loom harness

Frank H. Kaufmann (to Steel Heddle Manufacturing Co.), USP 2,570,815, October 9, 1951.

A loom harness comprising top and bottom rails connected at their ends by side struts, each of the rails having a hollow metallic rib portion along its inner edge extending inwardly toward the center of the frame, a metallic rod positioned in the interior of the rib, portions of the rib being recessed at certain locations to expose the interiorly mounted rod for portions of its length, slide hooks mounted on the exposed portions of the rods, heddle rods supported intermediate their ends by the slide hooks, and heddles mounted on the rods.

Loom reed

Ernest J. McFetters. USP 2,572,365 (Oct. 23, 1951).

A loom reed comprising a plurality of spaced splits and having end bars at each end of the loom

reed, a U-shaped member disposed over the ends of the splits and extending throughout the length of the reed, said U-shaped member having its free edges turned outwardly away from each other to provide a channel for reception of the edges of a tubular adapter when slipped thereover, said U-shaped member having a plurality of perforations through its side walls to allow the ingress of solder into the spaces between the splits confined between the walls of the U-shaped members.

Maintenance of weaving machinery

M. M. Tiwari. *Indian Tex. J.* 683-684 (July 1951).

Discusses maintenance of weaving machinery as falling into the following categories: (1) cleaning, (2) lubrication, (3) repairs, (4) setting and timing, and (5) overhauling.

Practical terry weaving and designing. 2

T. Hargreaves. *Textile Industries 115,* 132-6 (Oct. 1951).

A completely equipped loom is necessary for weaving the more complex terry designs; and in this second article on terry weaving and designing, the equipment required for the modern terry loom is outlined. The principle of designing for figured terry is shown by the weave, drawing-in draft, and chain pegging plan for a figured three-pick terry. Further development of this principle is shown in a figured terry design suitable for a child's bib and in a diagonal ribbed terry towel. Weave, drawing-in draft, etc., are given for these designs.

Quill polisher and degreaser

Anon. *Textile Industries 115,* 138 (Nov. 1951).

See front section.

Shuttle-bonding gives longer shuttle life

Anon. *Textile World 101,* 135 (Nov. 1951).

Weaving shuttles, traditionally made of dogwood or persimmon wood for high impact strength and retention of smooth contours for long periods of continuous operation, are said to have longer life if surfaced on two or more sides. Surfacing is done with a hard fiber sheet on electronic dielectric-heating equipment made by Westinghouse Electric Corp., 306 Fourth Ave., Pittsburgh 30, Pa.

The new techniques uses stray-field heating, with electrodes embedded in rubber on the surface of thick rubber dies. The glue line is heated to polymerize the thermosetting plastic glue used with the new process. A radio-frequency gen-

erator supplies the required dielectric heat. A standard steel die set, used in a hydraulic arbor press, makes up the upper and lower platens on which are mounted the electrodes and rubber dies.

Glue saving of up to 75% have resulted, since the new technique requires less glue.

Shuttle changing mechanism

Emile Achille Butin, USP 2,572,107 (Oct. 23, 1951).

Iu a weaving loom of the type including an automatic shuttle changing device contains a rockable shaft arranged longitudinally of the loom, at least one stationary shuttle holder arranged radially of shaft, a cradle including guiding arms adapted to rock in unison with the shaft under the action of the loom control mechanism and located underneath the holder, means controlled by the control mechanism, for releasing at each operation of the shuttle changing device the lowermost shuttle in the holder for dropping same on to the cradle, means controlled by the control mechanism for rocking periodically the guiding arms for transferring any shuttle that has dropped on to the cradle into its operative position in the shuttle box of the loom.

Shuttle refinishing and sizing machine

Anon. *Textile Industries 115,* 163 (Nov. 1951).

See front section.

Shuttle threading block

Antonio Villani (to Draper Corporation), USP 2,571,396, October 16, 1951.

For use in a shuttle of the type in which a filling supply is automatically replenished, a threading block adapted to thread completely on the first pick after replenishment which comprises means defining a thread passage at the inner end of the block, a thread trap at the outer, forward end of the block and an angularly disposed thread guiding surface between the passage and trap, a side eye at the lower portion of the trap and an upwardly directed entrance slot for the eye.

Shuttleless loom

Anon. *Fibres 12,* 173 (May 1951).

See front section.

Silk and silk weaving

H. Bhattacharzee. *Indian Tex. J.* 741-744 (Aug. 1951).

Cites how silk is obtained and gives the various components of silk. Discusses silk degumming and presents data showing some of the variations in silk from different locales.

Stop motion for loom

Robert H. Roughsedge and Hans G. Lustig (to Celanese Corporation of America), USP 2,570,381, October 9, 1951.

The means for stopping loom operation upon breakage of a warp yarn comprises a light source, a concentrated arc lamp having a pin point light source, lenses and an iris, a power supply circuit for the same and a vacuum snap switch in the circuit in parallel with light source, for projecting a concentrated beam of light rays across the entire width of loom fixed at one lateral end of loom and a photo-electric tube for receiving light rays fixed at the other lateral end of loom. Operative means are controlled by the electric tube adapted to operate a relay to stop the machine upon the passing of a broken yarn end through the beam of light rays, an electric circuit connecting photo-electric tube and relay and means including a potential dividing resistance and a condenser in the circuit adapted to provide feedback, and to cause the current to pass through relay for a time interval sufficient to effect the operation of the relay.

Weave room seconds can be reduced

Robt. Posey. *Textile Industries 115,* 120-2, 205 (Oct. 1951).

To improve efficiency and production, mechanical improvements must be accompanied by a program of personnel supervision and product inspection. The supervisory quality control program of one large carpet mill, which cut in half its production of imperfect products, is outlined. Topics discussed include weaving defect report, weaving specifications, finished goods inspection, evaluating the weaver, and report committee.

Knitting C 3

Adjustable magazine creel for knitting machines

Ralph M. Bennett (to Kilburn Mill), USP 2,571,523, October 16, 1951.

In a knitting machine; a fixed vertical guide member, a carriage movable vertically on the guide member, a horizontal arm extending from the carriage for supporting a plurality of cones whereby the arm may be moved from a raised horizontal plane to a lowered horizontal plane, and spring means constantly urging the arm towards the raised horizontal plane.

New needle-feed lockstitch machine available

Anon. *Textile World 101,* 122 (Nov. 1951).

Two new classes of needle-feed Lockstitch ma-

chines, a single-needle machine identified as Class 61800 and a two-needle machine designated as Class 62200, have been developed by Union Special Machine Co., Chicago, Ill. Both machines produce stitch type 301 and are being produced in styles suitable for use on light and heavyweight work.

The hook and hookshaft have been designed so that the removal of the hook does not require retiming or resetting of the hook point when it is replaced in the machine. The hook mechanism also contains a mechanical opener.

Reciprocating yarn carrier

Richard Ernst Schletter (to Textile Machine Works), USP 2,570,387, October 9, 1951.

A reciprocatory yarn carrier having an arm lengthwise of which the yarn passes, a guide tube carried at one end of the arm through which yarn is delivered to a knitting means, the arm having a groove in its upper surface extending from the intake end of the tube, and a member lying generally parallel to the arm above the groove and along which the yarn passes, the member having at its lower end a portion providing a smooth, relatively flat, transverse discharge surface for the yarn, whereby yarn passing along the member is guided from its lower end directly into the tube.

Refinements added to Aveco tricot knitter

Anon. *Textile World 101*, 123 (Nov. 1951).

The refined Kidde-Aveco two-bar, 168-in. tricot-knitting machine has been introduced by Kidde Mfg. Co., Bloomfield, N. J. The Kidde company recently took over the Aveco knitter and has added refinements and new features.

The heavy one-piece base and girt, designed to insure accurate alignment of parts, has been kept intact, as have many other features proved to be good.

Sinker sleeve oil guard for S & W Komet machines

Staff. *Textile Industries 115*, 193 (Oct. 1951).

Oil is prevented from dropping onto the finished fabric of the stocking on Scott & Williams Komet machines by a new sinker sleeve oil guard which is easily attached or removed for cleaning and can catch the drippings from several months of operation. Mfr.: Scott & Williams, Inc.

Straight knitting machine

Johannes Paul Ludwig (to Phoenix Hosiery Company), USP 2,571,591, October 16, 1951.

In a straight knitting machine, a series of

spring beard needles; a presser ledge; means for normally actuating the needles so that the beards of all of them engage the presser ledge; auxiliary means for actuating the needles at other times with prevention of contact of their beards with the presser ledge; normally retracted idle presser elements associated with individual needles of a sectional group of the series; means for positioning the presser elements at the aforesaid times between the needles of the sectional group and the presser ledge; a bar with knock-over to cooperate with the needles; means for moving the knock-over bar outward relative to the presser ledge during fabric loop formation; and means fulcrumed on a fixed frame member of the machine and operative to cause the presser elements, when in active position, to move outwardly with the knock-over bar, as and for the purpose set forth.

Special fabrics C 4

Cloth top sock

Walter F. Connor (to Hub Hosiery Mills), USP 2,571,543, October 16, 1951.

A new article of manufacture is a sock comprising foot and ankle portions of knitted fabric, and a tubular cuff of woven inelastic fabric stitched to the ankle portions. Cuff includes the longitudinal pleats extending from end to end and a hem on its free end, and spaced rows.

Pile fabric

Garfield J. Underwood and Albert J. Ammerall (to Mohawk Carpet Mills, Inc.), USP 2,571,-077, October 9, 1951.

In a pile fabric comprising stuffer warps, weft yarns crossing the stuffer warps in a plurality of levels, and binder warps crossing the weft yarns above and below at intervals across the fabric to bind the weft yarns in place relative to the stuffer warps, a pile made of warp yarns bound beneath weft yarns in one level and lying between adjacent spaced binder warps, the pile warp yarns having portions raised between adjacent weft yarns in the upper level to form pile elements, each pile element formed of one yarn lying offset warpwise from the pile elements formed of adjacent yarns on opposite side of the yarn, each pile warp yarn being formed of a pair, of singles yarn components piled together, one of the components being a relatively dense yarn having a relatively high twist of the same kind as and greater than the ply twist and the other component being a relatively soft and bulky back-twisted opened-up yarn having a substantially

lower twist than the dense component, the bulky component being wrapped spirally about the dense component.

Pile fabric

Russell C. Gebert and Howard J. Eberwein (to James Lees and Sons Company), USP 2,571,860, October 16, 1951.

A pile carpet comprises a solid ground fabric composed of an upper series of wefts in one horizontal plane, a lower series of wefts in warp-wise staggered relation to upper wefts in another relatively spaced parallel plane. Chain warps are provided for tying the upper and lower wefts, a group of stuffer warps between adjacent chain warps, wool pile warp passing under and tied by only alternate upper wefts, and a second continuous wool pile warp between the adjacent chain warps, the second wool pile warp passing under and tied by only the alternate wefts between the wefts to which the first wool pile warp is tied.

Inspection and testing C 5

Constant speed cloth examiner

Staff. *Textile Industries 115,* 197 (Oct. 1951).

A new constant speed cloth examining machine, manufactured by Hinnekins Machine Co., is said to allow inspection of finished goods and light-screening of grey goods without changing the machine set-up. An automatic piece stamping mechanism provides a more positive method of measuring goods. The examiner is also reported easy to handle and practically fool-proof.

STANDARD FINISHING D

Apparatus for drying fabric

Harry W. Butterworth, Jr., Samuel Cohn, Mortimer Cohn, and Fules G. Walter (to Samcoe Holding Corporation), USP 2,570,318, October 9, 1951.

In a drying system for fabrics of the class consisting of knitted and woven textiles, a casing, a plurality of rotatable members within the casing adapted to support and convey a continuous length of the fabric to be dried and having previous peripheral structures directly supporting the fabric alternately first on one side and then on the other and feeding the fabric while permitting passage of air therethrough, an outer supply of heated air, separate air ducts for the outer air supply, and a plurality of separate air distributors independently leading the air to each side of the fabric length as it passes over the rotatable members and separately receiving the air from the

outer air supply through the air ducts and having nozzles adjacent the pervious peripheral structures passing the air supplies through the fabric on the members alternately from the air distributor nozzles on the other side so that both sides of the fabric are alternately subjected to the air flows and the fabric is evenly dried on both sides.

Cloth folder has air-operated clamps

Anon. *Textile World 101,* 130 (Nov. 1951).

A new improved cloth-folding machine has been developed by Hall and Jansson Co., 177 Highland St., Worcester, Mass. The machine has air-operated jaws for clamping the cloth and an automatic table that returns from its lowest operating position to the starting position by a reduction-geared motor drive. The folder was designed particularly for handling plisses in long cuts to manufacturer's requirements.

Corn products

Floyd A. Lewis. *Rayon & Synthetic Tex. 32,* 85-6, 106 (Sept. 1951).

The essential role that corn products play in the textile industry is discussed. Uses include warp sizing, finishing, printing, and the production of Vicara, a synthetic fiber made from zein, a corn protein.

Dry heat setting nylon

R. E. Fryer. *Dyer 105,* 845, 847 (June 9, 1951).

Improved methods for setting woven and knitted nylon fabrics involve treatment by dry heat at temperatures approaching the softening point of nylon. A multi-roll gas or electrically heated model and machines utilizing hot air, with gas as the source of heat, in which the fabric passes over two or more "cans" are two successful high temperature dry setting types of machines now used for nylon woven fabrics. In addition, Canadian Industries Ltd. has developed a semi-commercial hot roll machine, features of which are described. Equipment developed for nylon warp knit fabrics include use of hot air setting techniques in open width on a pin tenter frame and use of radiant electric heat units operating about 2″ above the cloth surface. Recommendations on baking conditions and processing routine are given for both nylon woven and warp knit goods.

"Drying" — Dr. Fargher sums up

R. G. Fargher. *Dyer 105,* 825-7 (June 29, 1951).

Extracts are given from a paper which re-

views some of the contributions made to the Institute of Fuel's Conference on the "Study of Drying." Topics discussed include: assessing the efficiency of drying machines; limitations imposed on economical drying by the varying properties of wet materials and by the need to produce an appearance or "handle" after finishing; cylinder drying; recirculatory driers; package drying; sources of heat; instrumentation of drying machines; etc.

Hosiery dryer eliminates final boarding

Anon. *Textile World 101,* 122 (Nov. 1951).

A basically new machine for the final finishing of ladies' all-nylon hosiery has been developed by Smith, Drum & Co., Allegheny Ave., below 5th, Philadelphia, Pa.

Production per operator is said to be four to five times usual rates, and the percentage of firsts is said to be increased because the system requires no forms whatever. A dull appearance is also imparted to the hosiery.

On a machine installed recently at Berkshire Knitting Mills, three operators with only two days' experience produced 1,200 pairs of 15-den. stockings in 8 hr. (400 dozen per operator) with considerably less effort than required to do normal boarding.

How far the continuous bleaching process is successfully applied. Solution of some of the important problems

N. H. Shak. *Indian Tex. J.,* 737-740 (Aug. 1951).

Discusses various types of automatic and high speed equipment used in various stages of the bleaching operation. Shows the savings in time which results from the use of such equipment.

Identifying carbonizing faults in wool piece-goods

T. H. Sedgwick. *Textile Mercury & Argus 125,* 463, 465 (Sept. 14, 1951).

Sulphuric acid reacts with wool and forms sulphanic acid on the fibers. This results in a decrease of the wool's affinity for more acid or acid dyes, and hence woolen pieces which have been overcarbonized in places will show light streaks or marks when dyed with acid dyes. This is due to a decrease in acid dyestuff affinity in the carbonized place.

Overcarbonizing may be caused by:

1. Local excess of acid.
2. Local excess of heat.

Carbonizing faults generally run warp ways

and may also be due to the cloth being folded during passage through the wringer or squeezer, or by running double over during its passage through the drying chamber.

A dye technique is explained for showing up poor carbonizing.

Improved brushing machine has split-second brake

Anon. *Textile World 101,* 127 (Nov. 1951).

See front section.

Improved calender reduces maintenance

Anon. *Textile World 101,* 126 (Nov. 1951).

An improvement in its 80-ton hydraulic calender has been announced by Van Vlaanderen Machine Co., 370 Straight St., Paterson, N. J.

The cylinders and pistons have been enlarged to maintain an 80-ton nip pressure at an oil pressure of only 770 psi.

Periodic disassembly for replacement of the old-type ram packing is no longer necessary with the new improvements.

Influence of mercerizing and bleaching processes on fine structure of cellulose

I. Gailey. *J. Soc. of Dyers and Col. 67,* 357-61 (Oct. 1951).

It has been shown that cellulose is fairly reactive and readily undergoes change, and that any irregular treatment which the cotton may receive during mercerizing, kier boiling, and drying can cause variations in the sorptive capacity of the material as a result of changes in the fine structure, such as percentage crystallinity, orientation, type of crystal lattice, and size of crystallite. These variations in sorptive capacity can give rise to unlevel dyeing.

Meter for caustic soda is all-nickel

Anon. *Textile World 101,* 136 (Nov. 1951).

An all-nickel variable area flow meter designed especially for handling caustic streams is now available from Fischer & Porter Co., Hatboro, Pa. All parts of the meter in contact with the fluid are constructed of nickel. A steam jacket surrounds the liquid passages through the meter, which is available in sizes ranging from ½ to 300 gal. per min.

Machine dyes or scours raw stock continuously

Anon. *Textile World 101,* 125 (Nov. 1951).

See front section.

Needle cooler facilitates uses of Orlon thread on heavy duty machines

Staff. *Textile Industries 115,* 199, 201 (Oct.

1951).

A needle cooling device, developed by Union Special Machine Co. and Singer Sewing Machine Co., used liquid to dissipate the heat developed by the friction of needles' passage through heavy fabrics and thus permits the sewing of heavy fabrics with Orlon thread at commercial speeds. The device includes a reservoir for the special rust inhibited coolant that feeds by gravity through a capillary tube to a small felt pad through which the needle passes before piercing the fabric. Mfr.: E. I. duPont de Nemours & Co., Inc.

Preventing flocking when milling low grade woolens

G. L. Atkinson. *Textile Mfr. 77*, 508-9, 511 (Oct. 1951)..

The materials and construction of low-grade fabrics will not, in many cases, stand prolonged milling or other wet treatment without the danger of serious flocking, resulting in weakened and badly finished cloths.

Milling in the grease is often regarded as a cheaper process than milling after scouring.

The materials and construction of this type of fabric will not stand prolonged milling, as much milling of the cloth must be accomplished in the shortest possible time. The utmost must be gained in the matter of drafting. Friction on the cloth during its passage through the machine should be reduced to a minimum.

Produce your own hypochlorite for bleaching

Anon. *Textile World 101*, 125 (Nov. 1951). See front section.

Scouring nylon fabrics

Anon. *Textile Mfr. 77*, 510-11 (Oct. 1951).

Nylon materials may be scoured in various methods, e. g., the usual scouring equipment can be used, but the precise method depends upon the nature of the fabric, and whether it has been set or not.

In many fabrics, specifications for permanency of set or minimum shrinkage are involved.

Almost any standard boil-off with materials such as soaps, synthetic detergents, together with a small quantity of tri-sodium phosphate, sodium hexamethaphosphate with sodium metasilicate is sufficient to accomplish the scouring of nylon.

Selvedge marking machine

Milford-Astor Ltd. & W. E. Image. Brit. P. 653,665. *Dyer 106*, 110 (July 27, 1951).

This textile marking machine consists of a blocking head with a base inset into the edge of a table over which the cloth is drawn step-by-step during the marking operation. The table has at its rear a driving roller and a pressure roller between which the cloth is drawn. A tensioning device comprising upper and lower horizontal rails extends the full width of the table with the upper rail rotatable in its bearings and having a pair of rocking levers whose ends are connected by horizontal bars. A length of cloth is led over the lower rail, beneath one of the bars and upper rail, and over the second bar before passing to the driving roller. Tension is varied by adjusting the rail-carrying levers. The blocking head overhangs the selvedge which abuts against a shoulder positioned to locate the cloth as it approaches the marking station, thus guiding the cloth to $\pm 1/32$ inch. Creases in the cloth from its side-thrust against the shoulder are urged towards the center-line of the piece by a plate which overhangs the shoulder so as to bear upon the upper face of the cloth. The base has a tiltable platform carrying a platen which normally extends beneath the selvedge and is adapted to press the selvedge against a stationary die, mounted on one end of a bed associated with a heater box in the lower part of the blocking head. Foil is led in ribbon form between the die and selvedge and has its pigmented face coated with guttapercha. The foil is stored on a reel in the rear part of the head, and is led down beneath a pivoted plate, over a stripping roller, then up to a feed roller, being connected upon a second reel. The driving roller may be rotated by hand or power, and the blocking mechanism and cloth-feed means are interconnected so that the cloth is stationary at each marking operation.

Setting woven and knitted nylon

Anon. *Dyer 105*, 849, 851, 853 (June 29, 1951).

A machine for setting nylon by a continuous process is being produced by the Spooner Dryer and Engineering Co. Ltd. The machine consists of the firm's standard stenter frame with pin chains, having an overfeed device and an electric eye for guiding the light material on to the pin chains. Heating is effected by gas or electricity.

Softening agents

Ciba Ltd. Brit. P. 653,674 and 653,732. *Dyer 106*, 108-9 (July 27, 1951).

In Brit. P. 653,674 a softening process for fibrous materials, such as wool, silk, cotton, linen, rayon, polyamide fibers and leather, includes

treatment with an aqueous dispersion of a compound containing at least one aliphatic chain of at least 12 carbon atoms. The dispersion contains as a dispersing agent a water soluble salt of a mono-ester of an aliphatic, aromatic, or cycloaliphatic dicarboxylic acid with an N-hydroxyalkylamide of a higher fatty acid and in addition, if desired, a sulfonation product dispersing agent which is resistant to lime and contains an aliphatic residue of at least 12 carbon atoms.

In Brit. P. 653,732 a similar method is described in which the dispersing agent is a water soluble salt of a condensation product of an N-methylolamide of a higher fatty acid with a mercapto-carboxylic acid.

Specific-gravity instrument gives direct readings

Anon. *Textile World 101,* 136 (Nov. 1951).

A new direct-reading Densitrol specific-gravity measuring device has been announced by Precision Thermometer & Instrument Co., 1400 Brandywine St., Philadelphia 30, Pa. The new device is designed to eliminate the error caused by liquid and gas interface in the usual hydrometers. This instrument can be used for periodic checks of liquid density and also where process peculiarities prevent drawing samples from the system.

Squeezer provides more even lateral pressure, requires less maintenance

Staff. *Textile Industries 115,* 105 (Oct. 1951).

More even pressure from side to side is insured on the new Riggs & Lombard Type AD18 squeeze roll extractor by 3 diaphragm-type air motors on each side. The bottom roll, which is jacketed with stainless steel, effects better extraction and does not have to be removed for periodic regrinding. The top roll is rubber covered; and a single expander roll, placed ahead of the main rolls, feeds the cloth into the rolls open width and wrinkle-free.

Suction washing machine

E. F. Williams & W. J. Brayden. Brit. P. 649,-771. *Dyer 105,* 832 (June 29, 1951).

A fabric washing machine in which liquid is forced through the cloth by a vacuum is claimed. The cloth is treated in a taut, open width condition with the water heated to a moderate temperature and no soap added. Foreign matter, loosened by fulling and kept in soft condition by the residual soap, is readily removed by the forceful passage of the water through the fabric. Economy in the use of water is claimed. Goods may also be

dyed, wet out, or neutralized on this type of machine.

Synthetic detergents

O. M. Morgan. *Rayon & Synthetic Tex. 32,* 93-4, 96, 98, 106 (Sept. 1951).

A high quality synthetic detergent provides a good balance between wetting, cleansing, emulsifying, dispersing and foaming properties and, consequently, has found wide use in the textile industry. Applications of synthetic detergents in the manufacture of textiles are discussed under the following headings: synthetic fiber processing; viscose spinning; scouring rayon fabrics, nylon yarns and fabrics, blended fabrics; acetate saponification; synthetic detergents for wool; and synthetic detergents for cotton.

Textile finishing to produce soft and stiff finishes

A. J. Hall. *Tex. Industries and Fibres 12,* 296-8 (Sept. 1951).

Mechanical treatments to produce softness in fabric is relatively cheap and more economical than chemical treatments. If drying under moderate tension could be done, rigidity and roughness of fabric could be avoided. After drying, several methods may be used to restore a soft hand:

(1) The stiff fabric can be broken down by passage over scroll rollers or stud-covered rollers.

(2) The fabrics can be run through a three-bowl mangle in which the middle bowl is made of relatively soft material, such as hard rubber or even copper.

(3) Fabric stiffness can also be relieved by allowing them to relax under moisture or steam.

DYEING AND PRINTING E

Advance of metallizable dyes

F. Bradley. *Dyer 105,* 829 (June 29, 1951).

The term metallizable dye implies a dye with direct affinity for some textile fiber, producing a dyeing of which the fastness properties are enhanced by combination with some metallic salt. Certain chemical groups must be present in the dye molecule in positions suitable to enable lake formation to take place, that is, for the dye to be metallizable. The azo group dyes are the most numerous and important of the metallizable dyes, and copper and chromium are the most important of the metals used in conjuction with dyes of this type. The application of Coprantine dyes are discussed.

Alginates in printing pastes

Anon. *Dyer 106,* 97-9 (July 27, 1951).

Sodium alginate is being used as a thickener for printing pastes and is quite dissimilar in origin and chemical nature from the traditional thickeners: starch and natural gums. It is extracted from seaweed, and in the United Kingdom, where seaweed grows profusely, its ready availability offers important economic advantages. The uniformity of sodium alginate is much greater than that of natural products, such as gums; and with alginates in printing pastes almost any required viscosity and length of paste can be obtained. In addition, it gives an exceptionally high color yield on the fabric, and after steaming, it can be removed by washing. The supply, viscosity control, preservatives, preparation of the paste, dyestuff transfer from paste to fiber, and compatibility of sodium alginates are discussed.

Colors for mohair pile. II

Anon. *Dyer 105,* 821-3 (June 29, 1951).

Good fastness to washing and dry rubbing and good, or moderately good, fastness to light are important in the color stencilling of mohair pile motor rugs. Vivacity of shade is ordinarily not important. Commercial union dyes have a good affinity for mohair fibers in perfectly neutral stencil color, but in producing a full shade, some acetate or oxalate of ammonia should be used in the dye. For heavy shades, a small addition of a levelling agent, such as phosphate of soda, will facilitate an evenly pigmented result. Any tendency of the more sensitive dyes to change in shade during pressure-steaming can be counteracted to some extent by a suitable addition of chlorate of soda. A discussion is given on the application of acid, neutral acid, and basic dyes to mohair pile; the production of the "Royal" style embellishment on mohair pile using logwood; the application of cutch and gambier to the reverse half of rugs by brushing; animal pelt markings through the application of potassium permanganate and aniline black and grey; and the "flaking" process.

Current trends in the dyeing of synthetic fibers

Paul J. Choquette. *American Dyestuff Reporter 40,* P 681-84 (Oct. 15, 1951).

A procedure for the application of vats and leuco esters of vat dyes to Orlon and Dacron piece goods is outlined. High temperatures and the use of carriers for dyeing Orlon and Dacron on the package machine are explained. Methods for dyeing Vicara, Dynel and Fortisan are given.

Future trends in the development of dyeing equipment are discussed. A brief description of the new Williams fiber-processing machine is given.

Daylight fluorescent textiles

Richard A. Ward. *Rayon & Syn. Tex. 32,* 100, 102, 104 (Sept. 1951).

Daylight fluorescent materials differ from the strictly black light type in that they emit light in response to visible light as well as fluoresce strongly under ultraviolet light. The black light type fluorescent materials only respond to the invisible energy of the ultraviolet lamp.

When white light falls on a dyed fabric, all the colors in the light are absorbed with the exception of the particular color of the dye which is reflected to the eye. In the case of a daylight fluorescent dye, a considerable percentage of the energy in the shorter wave length colors, which are absorbed, is converted directly into fluorescent light. Thus, more brilliant color is produced due to this emitted fluorescent light added to the reflected light.

Most daylight fluorescent dyes belong to the class of basic dyes or the acid derivatives of the basic dyes, and their manufacture differs little from other aniline dyes. The dye must be held in a delicate balance between the quinoid (possessions of double bonds) and the non-quinoid conditions with some favorable outside or environmental substance, such as nylon or cellulose acetate, present. The dye molecules must be suitably held or solvated by the environmental material of the fiber and must be properly distributed throughout the fiber. Use in the dyebath of an organic solvent which has a certain amount of solvent effect on the fiber can bring about the desired dye penetration.

Nylon, cellulose acetate, and wool have been used on the daylight fluorescent fabric field, and recently daylight fluorescent cotton has been produced by a process of internal pigmentation. "Day-Glo" and "Coldfire" are the trademarks of these fabrics, offered by Switzer Brother, Inc. Uses for these fabrics include novelty applications, sportswear, safety garments, decorative ornamentation, etc.

Dyeing of silk and silk mixture materials

A. Thomson. *J. Soc. Dyers & Colourists 46,* 329-337 (Sept. 1951).

Describes first the method of obtaining silk and then its chemical composition. Discusses the applicability of the acid, basic, diazotized direct,

metallized acid, mordant, sulfur and vat dyes to silk dyeing.

Ebb and flow dyeing machine

S. R. T. Freeman & Freeman, Taylor Machines Ltd. Brit. P. 651,580. *Dyer 105,* 830-1 (June 29, 1951).

This textile dyeing and wet processing machine effects liquor displacement by raising and lowering its level in the vat by means of a piston, bellows or diaphragm, but preferably by the pressure of a gas, usually steam at about 30 lb. p. s. i. pressure. The ebb and flow of liquor thus obtained is said to result in an even and thorough impregnation of the goods.

Fast colors on wool

Ciba Ltd. Brit. P. 650,127, *Dyer 105,* 772 (June 15, 1951).

Mono-azo dyes may be applied to animal fibers in a single bath process from a solution containing the dye and an agent capable of yielding cobalt or nickel. The application of dyes may be from a neutral or weakly acid bath; e. g., acetic acid may be added at the outset. The great advantage in this is that it enables the dyes to be used in conjunction with non-metallizable dyes capable of dyeing from an acetic acid bath. Also it becomes possible to dye in a single operation with combinations consisting of non-metallizable dyes and dyes forming metal complexes. Very good properties of fastness, especially to light and washing, result.

Light and gas fading of dyed cellulose acetate

Monroe Couper. *Textile Res. J. 21,* 720-25 (1951).

In an effort to elucidate the chemical reactions which occur during dye fading on cellulose acetate fabrics, a study has been made of the "fading products" isolated from faded dyeings of 1.4 bis (methylamino)-anthraquinone. The products give evidence of the following reaction types: N-dealkylation, hydrolysis of amino (or methylamino) groups to hydroxy groups, oxidn. of amines to imines, and nuclear hydroxylation. The products of severe gas-fume fading are similar to these from light fading. The lack of gas-fume discoloration of dyes on nylon is explained.

Molten-metal dyeing machine to be manufactured in U. S.

Anon. *Textile World 101,* 130 (Nov. 1951).

An interim agreement arranged with Standfast Dyers and Printers, Ltd. of England for

Rodney Hunt Machine Co., Orange, Mass., to manufacture, for sale in the U. S. and Canada, the molten-metal dyeing machine developed by Standfast has been announced.

The molten-metal machine has been in production at the plant of Standfast Dyers and Printers Ltd. for several years. Better than 10,000,000 yd. of goods have been vat dyed commercially by this process. It is claimed that small or large yardages can be dyed with vat colors with equal ease.

The small dye bath that is utilized (slightly more than 1 gal. of dye liquor for a 60 in. machine) is said to insure even shades regardless of the speed of the machine. The equalization of pressure obtained in the metal unit itself makes possible the continuous vat dyeing of jacquard styles with assurance that both high and low portions of the fabric will be evenly dyed and free from streaks.

Multi-color photoprints on textiles

C. P. A. Ltd., F. Isherwood, and W. S. Miller. Brit. P. 653,698, *Dyer 106,* 108 (July 27, 1951).

A printing process for textiles is claimed in which natural colors are reproduced by building up from the three subtractive primaries and fixation of the dye on the material is obtained by exposure to light. The material is treated with a light-sensitive composition capable of forming a dye, exposed to light in selected areas, and then treated with a desensitizer. The operation is repeated for each further color required with the whole process completed without the material being washed before the last exposure to light has taken place. Light-sensitive compositions are used for the second and later applications. The substance which prevents further color formation may be applied separately instead of as a part of the light-sensitive composition. Registration difficulties caused by dimensional changes of the fabric in washing are avoided since washing of the material between exposures for each color is unnecessary.

Piece goods dyed in Williams hot-oil unit

Anon. *Textile World 101,* 126 (Nov. 1951).

A new process for dyeing of piece goods in a Williams unit containing hot mineral oil has been announced by General Dyestuff Corp., 435 Hudson St., New York. The method is recommended for dyeing with vat and sulphur colors as well as other types of dyestuffs.

Compared to the standard Williams method of

dyeing, the new Williams machine method is said to have the following advantages: (1) more economical handling on short runs, (2) better shading, (3) better appearance of dyed material, particularly on low count constructions, (4) greater stability of dyestuffs, (5) decreased time of development, and (6) elimination of the necessity of using two Williams units for reduction and fixation.

Pre-dyed cellulose ethers

Dan River Mills, Inc. (to A. Abbey), Brit. P. 651,283. *Dyer 105,* 832 (June 29, 1951).

A further specification dealing with the use of cellulose ethers as dye "carriers," described in Brit. P. 649,410, is for new articles of manufacture prepared by dissolving pre-dyed cellulose ether in an aqueous caustic alkali solution to form a final solution in which the dye and cellulose ether are in a stable, intimately associated condition. Most of these products, used for dyeing cotton and rayon fabrics, are stable enough to be stored or packed for shipment.

Rayon and synthetic fibers

Esmee Smith. *Dyer 105,* 843 (June 29, 1951).

Notes are given on the dyeing of Fibro-wool blends, rayon waste-wool blends, and nylon-wool blends.

Rayon cake dyeing

E. A. Stienen. Brit. P. 650,269. *Dyer 105,* 771-2 (June 1951).

A rayon cake dyeing apparatus in which the cakes can be compressed to give uniform dyeing is claimed. A carrier with a cylindrical wall, having threaded openings, is positioned on a projection of the operating tank, and shanks engage with the threaded openings of the wall. Baskets for the rayon cakes have perforations, and an adjuster with cylindrical core and perforations is positioned in each basket. After the cakes and adjusters are placed in the baskets, caps are screwed on the supporting spindles with their ends brought to bear against the top flat face of each cake, forcing the cakes in place with the required pressure. Dye liquor is forced through a pipe, through openings of the supporting spindles, and then through the perforations of the core of each adjuster. After passing through the cakes, the liquor escapes through the perforations of the baskets and is dropped into the operating tank, escaping through another pipe. The flow of the liquor may be reversed so that it flows from the outside of the cakes to their inside.

Three sources of artificial daylight

F. L. Warburton. *Dyer 105,* 828 (June 29, 1951).

Artificial daylight lamps should imitate the chosen phase of natural daylight both in color and in the proportions in which light of the different spectral colors is blended to produce this color. Also the lamp should have a high light output. The 3 types of artificial daylight lamps for color matching are: a filament lamp in combination with glass or gelatine filters; the ordinary fluorescent lamp adapted by use of suitable powders; and the fluorescent lamp with the shortage of blue in the light corrected from a filament lamp. Advantages and disadvantages of each type are discussed.

Vat dyes on acetate-acid leuco method

G. D. Sutton & T. E. Marchington Co. Ltd. Brit. P. 650,990. *Dyer 105,* 831 (June 29, 1951).

Strong coloration of acetate rayon may be obtained with vat dyes at low temperatures, in a short space of time, and without saponification of the acetate if the acid leuco compound of the dye is applied in the presence of large amounts of a water soluble swelling agent for the acetate (i. e., 30% or over). The instability of certain vat dyes in the presence of certain swelling agents in the concentrations required can be overcome by padding the material with a dye liquor without any swelling agent, and then impregnating it on a second padding machine with the agent and water. The material is run continuously through the two machines and then given a washing and soaping treatment. The liquor is made up with the dye converted to the alkaline leuco state by means of an alkali and a reducing agent in the presence of a suitable dispersing agent, and then changed to the acid leuco state by addition of a weak acid, or in the case of dyes which can be reduced satisfactorily in acid conditions, by reducing the dyes in water in the presence of a dispersing agent.

SPECIAL FINISHING F

Apparatus for the treatment of textiles

William Wycliffe Spooner, USP 2,571,494, October 16, 1951.

An apparatus for treating woven webs of textile fabric consisting of a liquor treatment vat, means to guide the web through the vat, a drying machine, a scray interposed between the vat and drying machine, means to convey web through

drying machine substantially in the absence of warp and weft tension in the web, means to moisten the web, means to finally dry web, and means to apply weft tension to web when in final drying means.

"Kelpie" anti-shrink process for woolens available in U.S.A.

Anon. *Textile Industries 115,* 146 (Nov. 1951).

See front section.

Progress report: British "Positex" rubberizing process

Staff. *Textile Industries 115,* 158 (Oct. 1951).

Textile fibers, immersed in an alkaline liquor, develop a negative charge while latex, treated with a cationic soap in an alkaline liquor, produces a positive rubber. The Positex treatment deposits this positively charged rubber in the form of minute particles on the negatively charged fibers so that the rubber particles act as flexible cement, forming bridges from one fiber to another, reducing or preventing movement of fibers with respect to their neighbors. The treatment is said to have no effect on the wetability with water or air permeability of the textile material, and the reduced fiber slippage gives increased tensile strength, reduced extension of yarn under tension, and reduced pilling and felting in knitted or loosely woven fabrics. In addition, the characteristic handle of the yarn is retained. For treating wool by the process, the material is pretreated by scouring, rinsing, etc.; hydroextracted; and then the Positex applied. Yarn may be treated in hank form in a circulating bath while woven or knitted materials, felts, etc., may be impregnated by padding or spraying. The treatment is particularly applicable to wool, and good exhaustion of the rubber bath can be obtained with asbestos and glass.

Textile treating solutions and compositions containing same

Frank Wesley Lane and William Leonard Dills (to E. I. du Pont de Nemours & Company), USP 2,570,566, October 9, 1951.

A flame-proofing solution for cellulosic substances comprising an aqueous solution of titanium and antimony in an inorganic monobasic acid, the solution containing at least 25 g./l. of the combined oxides of titanium and antimony, with the atom ratio of antimony to titanium not exceeding 2 and the weight ratio of titanium to antimony ranging up to 10.

TESTING AND MEASUREMENT G

Instruments and instrumentation G 2

Accurate method of measuring the clinging power of jute fiber

B. K. Chakrobarte. *Indian Tex. J.,* 674-682; 672 (July 1951).

Discusses a method for measuring the friction resulting when fiber moves past another fiber or a bundle of fibers. Describes and discusses the apparatus used, explains the experimental procedure, cites the calibration and calibration procedures and shows the derivation of an expression for the coefficient of limiting friction.

Apparatus for textile analysis and control as used in Spain

Alberto Barella. *Fibres 12,* 150-152 (May 1951).

Spain is said to be able to meet her own needs for instrumentation necessary in textile research, but to lack some of the newer techniques found in other countries. Her most commonly used instruments are described including a torsionometer, a hand-turned "filoscope" device which determines yarn regularity by taking the impression of the yarn upon gummed paper which has been dipped in a special solution, a micrometric balance, and a multiple "Microlanas" which cuts cross-sections of fibers at great speed. This speed is said to result from the ability of the "Microlanas" to make 11 cuts at a time. The device is made by Ulloa and Kelvin Workshops, Madrid, Spain, and was developed by Dr. Don Carlos Luis de Cuenca.

The Barella regularimeter

Alberto Barella. *Tex. Industries & Fibres 12,* 193-4 (June 1951).

See front section.

The Blanchart dynamometer

Alberto Barella. *Tex. Industries & Fibres 12,* 193 (June 1951).

See front section.

Comparison of breaking and bursting strength values with the Taber Abraser

Margaret Harris Zook and Pauline Berry Mack. *American Dyestuff Reporter 40,* 661-66 (Oct. 15, 1951).

A comparative study of the losses in strength obtained by means of breaking strength tests, of four combinations of abrasion and test directions, regardless of where the greatest abrasive action may be applied in consumer wear, and by burst-

ing strength values from three locations in the abrasion ring. The procedure is discussed and the resulting data are presented in graphical and tabular form.

A precision instrument for detergency studies

H. J. Wollner and G. S. Freeman. *Amer. Dyestuff Reporter 40,* 693-96 (Oct. 29, 1951).

The design of a new precision detergency measuring instrument is discussed. Design objectives are enumerated and the method of achieving them outlined. The concept of supplying mechanical action in the form of a sinusoidal oscillation and its utilization are discussed along with the prospects of determining the mathematical relationship between energy input and soil removal. Data are given indicating the high test precisions that the Deter-Meter detergency tester is capable of producing.

Shrinkage and elongation of woven fabrics

Edwin P. Johnstone. *American Dyestuff Reporter 40,* P710-14 (Oct. 29, 1951).

The Dynamic Dimensional Change Meter is a simple, convenient instrument for studying dimensional change in a captive specimen of fabric. The fabric may be subjected to any desired conditions of immersion or spray wetting, drying, temperature, or various degrees of relative humidity without removal from the instrument. Interesting results have been obtained in these laboratories and it is believed the device should be useful in studying the relation of structure, yarn twist, mixed fiber content and finish to shrinkage and elongation. It may provide information concerning the optimum point at which tension should be applied most effectively in relation to critical moisture content of the fabric.

Thermal degradating in tire cords. Part I

Carl M. Conrad, Verne W. Tripp, and Trinidat Mares. *Textile Res. J. 21,* 726-39 (1951).

A study has been made of the thermal degradation of cotton and rayon tire cords before processing and at several stages of processing into tires. Also, representative cotton and rayon tires were operated on a NBS test wheel to failure and the cords were tested. The effects of the degradation on strength, elongation and D. P. are discussed.

This is the way we make our cloth

Anon. *The Joanna Way 2,* 13-15 (Nov. 1951).

See front section.

Three new yarn testers

Anon. *Textile World 101,* 174 (Nov. 1951).

Three new testers have been developed by the Uster Corp. The strength tester, for single-end testing, is automatic and indicates individual values of breaking strength and elongation and the sum of breaking strength and elongation, frequency of distribution of breaking strength and the number of tests carried out. The new evenness tester determines the evenness of filament materials of zero or low twist at speeds up to 100 yds. per min. This tester can also be used on high-twist filament materials. A third tester with a quadratic integrator is now available which automatically calculates the coefficient of variation while the test is being run.

Uniformity Analyzer features improvements

Anon. *Textile Industries 115,* 143 (Nov. 1951).

See front section.

Variable torque vise

Lyle E. Hessler & Billy K. Power. *Textile Industries 115,* 155, 157-8 (Oct. 1951).

The Pressley strength tester is equipped with a stationary vise and torque wrench. These torque wrenches are sometimes responsible for irregular pressure in that their performance changes from time to time and even from sample to sample. Under hard usage failure of the torque wrench becomes more and more apparent. To overcome any variable jaw pressure, the laboratories of Texas Technological College are using a vise pivoted from the center and mounted on ball bearings for less drag and truer tension. A T-wrench is substituted for the torque wrench and has been found easier to handle, reducing operator fatigue. Results have shown that by using this vise and modifications each set of jaws may have a predetermined load applied, depending on the pressure required to break the standard check cotton. This adjusted pressure prevents overloading a sensitive pair of jaws and increases the pressure of a non-sensitive pair. Thus, the component parts of the jaws are given an extended working life.

Wash fastness testing mechanism

J. R. Geigy, A. G. Brit. P. 653,657. *Dyer 106,* 109 (July 27, 1951).

Apparatus for testing the fastness to washing and milling of dyeings consists of a heating bath in which smaller test-liquid holders are inserted besides one another with each of the holders hav-

ing an inclined corrugated sheet metal base forming a friction surface. The test liquids, e. g., soap solution, can be held at a fixed temperature when necessary by electrical heating of the outer bath. A crank mechanism by the side of the bath comprises a driving shaft, at each end of which is fitted a driving wheel with an eccentric groove, and an actuating shaft which fits into a sloping guide-slot. The ends of the actuating shaft project through the guide slots and fit into the groove. When the electric motor is started, it sets the driving wheel in motion so that the ends of the actuating shaft move backwards and forwards in the slot. Working in conjunction with the corrugated bottom of each container, a scrubber-like rubbing component has at its free end a friction-shoe with its other end connected to the actuating shaft through a coupling which can move freely on the shaft. A loading-lever carrying a sliding weight is fixed to the coupling and may be rotated backwards to take the load off the friction shoe. A spring holds the sample of test material against the sloping holder bottom. A shaft running along the lower part of the bath is driven from a pulley-wheel and carries paddles at regular intervals for stirring the liquid in the heating bath. Above the bottom of the bath are electrical heating elements, and the temperature can be regulated by an adjustable thermostat.

Yarn breakage detection by electronic ray

Anon. *Textile Mercury & Argus 75,* 595 (Oct. 5, 1951).

See front section.

TEXTILE MILLS H

The American system — 1951

Carl D. Brandt. *The Whitin Review 18,* 1-7 (Sept.-Oct. 1951).

See front section.

Design and the Silk Center

E. W. Goodale. *J. Textile Inst. 42,* P857-P866 (Sept. 1951).

The author described the operation of a Silk Center whose function is to promote the long term interests of the silk industry.

Ensuring cotton mill profits in a tight market

M. C. Dutt. *Indian Text. J.,* 658-661 (July 1951).

Outlines procedures for producing cloth at competitive prices. These include: using automatic machinery, minimizing waste, properly assessing work load and increasing efficiency. Cites three studies in which cost production comparisons are made between an English plain loom and a Swiss automatic, between a new and an old automatic loom and gives data showing consumption of loom accessories.

Get the most from your roller conveyors

Martin J. Anderson. *Modern Materials Handling 6,* 51-3 (Oct. 1951).

Roller spacing, capacity, slope, atmospheric conditions are factors you must watch if you're to get the most for your money from roller conveyors.

A table shows suggested grades or slopes for roller conveyors handling a variety of packages of given weights, including oil drums, cartons, brick, wood cases, cans, etc.

Improved electric truck

Anon. *Textile World 101,* 131, 236 (Nov. 1951).

A molded Fiberglas roving truck has been added by Westport Fibre Corp., Westport, Mass., to its line of textile-handling units of Fiberglas. This roving truck is of one-piece molded construction with a smooth inside finish. The truck needs no rivets, screws, or bolts in any part of its construction, is lightweight, tough, moisture-proof, and impervious to oil, grease, and most chemicals. The trucks are three-fifths the weight of trucks made of conventional materials. They are available in five popular sizes and can be equipped with any style casters needed.

The Japanese textile industry

Wm. D. Dunleavy. *The Whitin Review 18,* 28-34 (Sept.-Oct. 1951).

See front section.

Joining buildings via air

Anon. *Modern Materials Handling 6,* 35-39 (Oct. 1951).

A picture story of a tough materials handling problem shows the layout of the buildings at China Grove Cotton Mills Co. Thread yarn moves from the twisting department to the finishing department. Enclosed freight carrier, automatically dispatched on monorail solved the problem.

Movement between three buildings is shown at Textiles, Inc., which took over three mills, formerly separate plants. They connected these scattered buildings by air, avoiding ground crossing of road and railroad.

Mill modernization speeds up as lower unit costs are sought

Richard C. Scott, *Textile World 101*, 110-111, 328 (Nov. 1951).

A record of $746,200,000 will have been spent on or committed to American textile-mill modernization from January first to the end of December, 1951. Rapid-amortization programs of the government make financial risks involved less hazardous to those anxious to expand. Trend is to new plants and locations in the South rather than the refurnishing of processing units in older established areas. 53.9¢ dollar brings actual equipment value, compared with 1939, down to 4 instead of 7½ times that of prewar. 1951 may be the "peak year" as industrial-materials cut-backs may in 1952 temporarily slow down natural continued growth.

Three types of steam from one process boiler

Anon. *Textile Industries 115*, 139 (Nov. 1951).

See front section.

Train your fork truck operators. I & II

W. B. Edison. *Modern Materials Handling 6*, 40-3 (Sept.-Oct. 1951).

Part I of this series (September *Modern Materials Handling*) describes how to set up a training school and driving range instruction for fork truck operators. Part II gives test, drills, and examinations for the training class. Periodic exams are stressed insuring greater safety in the use of industrial vehicles. Various drills test the drivers skill and safety consciousness.

A year of new equipment for the textile industry

Anon. *Textile World 101*, 113 (Nov. 1951).

Textile World's annual new equipment section includes the latest machines and devices for:

Yarn preparation
Twisting, Warping, Winding, Slashing
Weaving
Knitting
Dyeing and Finishing
Materials handling
Textile accessories
Regulating, controlling, measuring, testing
Air conditioning, heating, ventilating
Power transmission
General industrial supplies

CHEMISTRY AND PHYSICS OF TEXTILE MATERIALS I

Adhesion IV. The meaning of tack temperatures

A. D. McLaren, Robert Rager and H. Mark.

J. of Polymer Science 7, 463-71 (Nov. 1951).

Heretofore it has been assumed that, under the same experimental conditions of time and magnitude of applied pressure, all amorphous polymers have equal viscosities at their tack temperatures. Further evidence is obtained with a number of polymers in support of the theory. As a non-equilibrium property characterizing high polymers, tack temperatures thus belong in a category with brittle points, second-order transition points, and softening temperatures.

Effect of deterioration on the degree of crystallization of viscose fibers

K. Schwertassek. *Melliand Textilber. 32*, 774-78 (Oct. 1951); *in German.*

With the aid of investigation results the author shows how oxidation, acid, and alkali deteriorations have a promoting effect on the degree of crystallization of viscose fibers. Deterioration by temperature has no effect. Investigations also show influence of repeated washing operation on the degree of crystallization. Proof is given of a distinct crystallization process by alternately wetting and drying viscose fibers at room temp. Suggestions for a practical application of the iodine adsorption method for evaluating deterioration are given as well as opinions on the different submicroscopic fine structure of artificial and natural cellulose fiber materials. Included also is the influence of non-swelling finishes on the iodine adsorption and the iodine adsorption of nitro, acetate and cuprammonium fibers.

Electron microscope

R. C. Davis. *Textile Forum 8*, 17, 37 (Oct. 1951).

The recent production of a relatively low priced electron microscope by one of the large electrical companies, has brought this formerly expensive instrument into the realm of possibility for many mills.

With its high powers, one no longer studies fibers, but the interior structure of fibers. Consequently, the electron microscope is not superior to the optical instrument in this respect. Because of the great price differential, it is actually inferior. If one wishes to make studies of dyestuff particles or certain finishes, wherein particle sizes lie below the range of optical instruments, the electron microscope would, of course, be required.

Gaseous pollutants of air

Martin Shepherd, S. M. Rock, Royce Howard

and John Stormes. *Anal. Chem. 23* (1931-40, 1951).

A new method for determining air pollutants combines the isolation of gaseous pollutants on a filter at liquid oxygen temps., sepn. of the isolated frozen concentrates and identification and estimation of distillates by the mass spectrometer. The method is capable of determining as little as 10^{-4} p. p. m. of some pollutants from a 100-l. sample of air; with larges samples, 10^{-6} p. p. m. can be determined. The method may be applied to special problems in air pollution over large areas or inside industrial plants.

The incorporation of acrylate resins into regenerated cellulose fibers

A. Nowakowski. *Textile Res. J. 21,* 740-46 (1951).

In an attempt to incorporate acrylic resins into rayon fibers, dialysis experiments were carried out on a homologous series of polymethylmethacrylates by using cellulose hydrate membranes of different origin. It was found that the physical properties of the treated fibers (up to 10.5% resin uptake) are unchanged, although the resin is distributed homogeneously throughout the fiber cross section. Physical aftertreatment, e. g., stretching, of the fibers may improve their properties; otherwise, only a chemical blocking of the OH-groups shows promise of improving the properties of regenerated cellulose hydrate fibers.

Molecular weight of "teflon" tetrafluoroethylene resin

K. L. Berry and J. H. Peterson. *J. of Amer. Chem. So. 73,* 5195-7 (Nov. 1951).

The objective of this work was to determine the molecular weight of polytetrafluoroethylene. Since the polymer is insoluble and infusible, attempts were made to introduce and determine radio-sulfur-containing end groups derived from persulfate initiator. The number average molecular weight of some relatively low molecular weight polytetrafluorethylenes are in the range 142,000-534,000.

Preparation and properties of regenerated cellulose containing vinyl polymers. I. Internal deposition of polymers

G. Landells and C. S. Whewell. *J. Soc. Dyers & Colourists. 67,* 388-344 (Sept. 1951).

Presents the conditions which have been worked out, using thermal and free radical polymerization techniques, for the deposition inside cellulosic fibers, of vinyl polymers derived from

monomers both soluble and insoluble in aqueous reaction medium.

Recent advances in filtration theory

Shelby A. Miller. *Chem. Eng. Progress 47,* 497-502 (1951).

A theoretical discussion of the mechanisms of the filtration process. Mathematical formulae and graphs supplement the article.

Translucent films of acrylic acid esters-acrylonitrile copolymers

Fred Leonard, Irving Cort and T. B. Blevins. *Ind. and End. Chem. 43,* 2500-2 (Nov. 1951).

In order to augment strength properties without unduly affecting translucency, investigation of the reinforcing effect of an isotropic silica was undertaken. Cast films containing the silica showed an enhancement in strength properties over uncompounded films, and films containing up to 40 parts of silica per 100 parts of dry copolymer suffered only slight loss in translucency in the unstrained state. However, as the compounded films were strained they showed a marked increase in whiteness and opacity, as compared to uncompounded films. Possible explanations of this effect are given.

What type filter and why

H. P. Grace. *Chem. Eng. Progress 47,* 502-07 (1951).

The author indicates the fields of application for various basic filters, as well as their advantages and disadvantages. The final filter selection for a special use must be based upon paper evaluations and extensive experimental work with the process material.

TEXTILE EDUCATION AND RESEARCH J

A century of cotton textiles

J. L. Stoves. *Textile Industries & Fibres 12,* 182-4 (June 1951).

See front section.

Evolution of a patent

Anon. *Ind. and Eng. Chem. 43,* 2487-96 (Nov. 1951).

A symposium on the evolution of a patent is presented. The principle topics discussed are transforming ideas into patent property, technical-patent liaison group, selection of patent counsel, invention records, reporting invention data, and chemical patent searches.

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